

WASTE-TO-ENERGY AS A TOOL FOR SOLID WASTE MANAGEMENT

**A Feasibility Study of the Implementation of
Contemporary Waste Management and Energy
Recovery Strategies in Washington State**

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Agenda



Introduction and Project Overview



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Team Contact Information



Project Overview

“What is the feasibility of implementing Waste to Energy (WTE) as a part of the solid waste management (SWM) and energy strategies of Washington State?”

1. Review academic literature, policy briefs, municipal reports and studies
2. Conduct informational interviews with industry, government, and non-government professionals and subject-matter experts
3. Examine case study examples of existing WTE operations

Intent: Analyze and assess the potential impacts of WTE incineration on the waste management hierarchy and present key considerations for discussion



Case Studies of Existing WTE Operations

10 case studies examined

- > Domestic Facilities
 - Spokane WTE Facility
 - Marion County Energy from Waste
 - Hennepin Energy Recovery Center
 - Palm Beach Renewable Energy Facility No. 2
 - Detroit Renewable Power
 - Wheelabrator Baltimore
- > International Facilities
 - South Skåne Waste Company
 - Kalundborg Eco-Industrial Park
 - Higashiyodo Factory
 - Restoffen Energie Centrale



Interviews with Stakeholders and SMEs

60 requests sent; 29 interviews conducted

> Government

- State Departments of Ecology, Commerce
- Utilities & Transportation Commission
- King County Solid Waste
- King County Council
- City of Spokane Solid Waste
- City of Spokane Energy & Sustainability
- City of Spokane Public Works
- Spokane Regional Health District
- Clean Air Agencies (ORCAA, PSCAA, SWCAA, SRCAA)
- US Environmental Protection Agency

> Community Organizations

- Center for Sustainable Infrastructure
- Puget Sound Partnership
- Zero Waste Washington
- Zero Landfill Initiative

> Private Industry

- Waste Management Public Sector Partnerships
- Resource Synergy

Interview Responses

“Do you consider WTE as a feasible option for solid waste management in Washington?”

- > Important component of integrated waste management system
- > Preferred over landfill, both in hierarchy and by interviewees
- > Worry of reduced recycling and “feed the beast” phenomenon



Interview Responses

“Do you consider WTE as a feasible option for energy strategy in Washington?”

- > Washington enjoys cheap, abundant energy
- > Not classified as renewable under CETA
- > Energy production is secondary benefit of WTE

Is garbage-burning project too much like WPPSS?

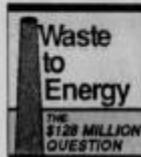
By Jim Camden
Staff writer

Opponents of Spokane's proposed waste-to-energy system sometimes try to damn the project with the most severe criticism that can be leveled in the Northwest: "It's another WPPSS."

Supporters say that's unfair, that the \$128 million project is nothing like the ill-fated Washington Public Power Supply System.

"If the public wants to pick up a public project, they say it's a WPPSS," said Roy Koege, the project's legal counsel.

There are many differences between the two projects, but not enough similarities to give



"WPPSS was not proven technology. This is." Both projects are mammoth ones for the entities building them, but there is a difference of scale.

In its heyday, WPPSS was building five nuclear power plants, with a total price tag of \$23 billion. The waste-to-energy project, on the other hand, involves one incinerator and steam generator, two transfer stations and a landfill. Total estimated cost: \$128 million.

For its various projects, WPPSS involved more than 100 utilities, a federal power-marketing agency and dozens of contractors. The waste-to-energy project requires cooperation among the city, county and state, but nothing on the scale required for building and selling nuclear power.

"The supply system was really handcuffed by competitive bidding laws," said David Beller, president of Seattle Northwest Securities, which offers

opposing the nuclear program.

Novak, in response to a report that an environmental group was opposing garbage incineration, suggested the group "couldn't find any whales this week."

When the region was embarking on its nuclear program, environmentalists argued that conservation and weatherization were cheaper alternatives. Utility

ANALYSIS

Chronology. Page 16.

executives scoffed, saying there weren't enough savings in those strategies and that their customers

revenue bonds — backed by garbage rates. But project officials are quick to point out that that's the standard way to pay for public-works projects, and their bonds will have more backing.

Many analysts believe the single largest problem with WPPSS was its practice of capitalizing debt. The supply system sold bonds to finance the plants, but it didn't have any revenue of its own when the projects fell behind schedule. So it sold more bonds, using money from the new notes, in part, to make payments on the old notes.

City and county officials have acknowledged the danger of such a practice. Novak has suggested the two governments set a deadline, beyond which they no longer will capitalize debt.

"I think we should continue to pay our way," he said. Selling bonds to pay off bonds "insulates you from reality."

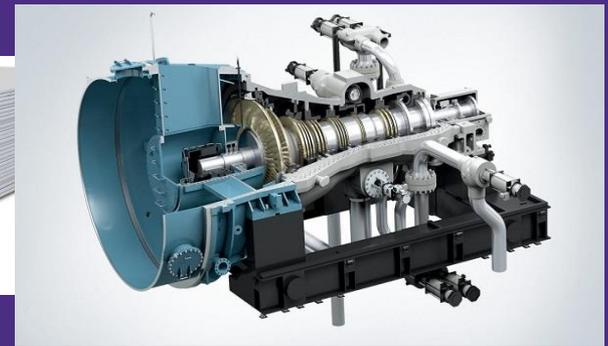
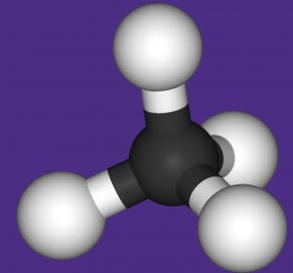
Interview Responses

“What strategic benefits do you think WTE could provide in Washington?”

> Waste Treatment Benefits

- Reduced solid waste burden
- Fewer long-term methane emissions
- Material recovery (e.g. ferrous metals, gypsum)

> Minor Energy Generation



Interview Responses

“What strategic drawbacks do you think come with WTE development in Washington?”

- > WTE is expensive
- > Public resistance, NIMBYs, and NOTEs
- > Siting challenges
- > Potential emissions



Interview Responses

“What individuals or organizations would potentially support or oppose WTE development in Washington?”

> Supporters

- Government officials, especially King County
- “...depends on the specifics of a given plan.”
- Local residents
- Environmental organizations

> Opponents

- Environmental organizations
- Local residents
- Current tip fee recipients (e.g. landfills)
- “...depends on the specifics of a given plan.”



Interview Responses

“If another WTE facility were to be planned and developed in Washington, what critical factors should be considered during the siting process?”

- > Proximity to feedstock and other SWM infrastructure
- > Environmental justice impacts
- > Site-specific environmental impacts
- > Using recoverable land (e.g. brownfields)
- > Local economic impacts
- > Cost effectiveness and financing
- > Public opinion



Key Considerations Discussions

“Essential factors” for future WTE development and consideration

- > Part of comprehensive SWM strategy
- > Siting
- > Financial Cost
- > Environmental & health impacts
- > Public engagement



Discussion: Strategic Consideration

Any future WTE development must be strategically planned to complement and accompany current waste management priorities



- > WTE can be implemented well or poorly
 - Success is dependent on inclusion within larger strategic goals
- > No evidence that Washington should shift current SWM priorities
- > Some degree of waste is inevitable



Discussion: Siting Influences

Co-locating WTE facilities near existing infrastructure can increase efficiency and decrease environmental impacts; environmental justice impacts must also be limited

- > Collocation with existing infrastructure
 - Transportation Networks
 - Feedstock
 - Proximity to Downstream Users
- > Environmental Justice
 - Don't further burden already-burdened communities



Discussion: Financial Considerations

WTE development and operation is expensive and energy resale to Washington utilities presents future challenges

> Significant Financial Factors

- Energy Market Competition
- Energy Recovery Efficiency
- Ongoing Maintenance and Compliance
- “Renewable” Classification Limitations



Discussion: Health and Environmental Monitoring

Additional WTE development in Washington must maintain diligent and continuous monitoring and mitigation of environmental and health risks.

- > Environmental and Health Risks
 - Emissions
 - > Greenhouse Gases
 - > Air Pollutants
 - > Toxins
 - > Risks to Water Sources
 - > Handling of Ash



Discussion: Public Engagement and Cooperation

Public opinion for WTE is mixed and driven by multiple inputs; additional WTE development in Washington must include considerable and comprehensive public engagement and cooperation

- > Public engagement and education improves outcomes of comprehensive SWM strategies
 - Public awareness of recycling and waste reduction priorities
- > Private-public cooperation and partnership increases accountability and transparency
 - Improved compliance and accountability
 - Improved resilience of SWM policies and strategies



Limitations and Conclusions

> Limitations to Study

- Broad and general scope of study (i.e., limited analysis of complicated issue)
- Limited sample size (e.g., limited environmental justice and community-oriented orgs, private industry input)
- Hypothetical application

> Future Research Recommendations

- Direct public and industry opinion/feedback polling
- Site-specific comparison of GHG potency and emission impacts
- Specific study of research of modern WTE technologies and approaches (e.g., gasification, pyrolysis, etc)



Questions and Open Discussion



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